

PRELIMINARY DATA SUMMARY

May 1992

U.S. Army Engineer Waterways Experiment Station
Coastal Engineering Research Center
Field Research Facility
Duck, North Carolina

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CERC Field Research Facility
Duck, North Carolina

This report provides a summary of basic oceanographic, meteorological and bottom profile data for the month. The data were obtained as part of the Measurements and Analysis work units at the U.S. Army Engineer Waterways Experiment Station, Coastal Engineering Research Center's Field Research Facility (FRF) in Duck, North Carolina. The FRF staff collected and analyzed these data. These summaries are intended to make the data readily available to all FRF users, and comments on their content and usefulness are invited.

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PART I: INTRODUCTION

The U.S. Army Engineer Waterways Experiment Station, Coastal Engineering Research Center's (CERC) Field Research Facility (FRF) is located on the Outer Banks of North Carolina, near the village of Duck (Figure 1).

The FRF research program provides a means for obtaining high-quality field data, particularly during storms, in support of the U.S. Army Corps of Engineers' coastal engineering research missions. The research pier is a reinforced concrete structure supported on 0.9-m-diam steel piles spaced 12.2 m apart along the pier's length and 4.6 m apart across the width. The pier deck is 6.1 m wide and extends from behind the duneline to about the 6-m water depth contour at a height of 7.6 m above the National Geodetic Vertical Datum (NGVD). In addition, a main building contains offices, an instrument repair shop, and a data acquisition room.

One of the responsibilities of the FRF research program is the collection, analysis and dissemination of data on local oceanographic and meteorological conditions. Bottom profiles along both sides of the pier and periodic bathymetric surveys are also performed.

This summary is intended to provide basic data as soon as possible after they are obtained. Questions and/or comments concerning the data may be directed to Mr. Clifford F. Baron at (919) 261-3511.

Part II presents the meteorological data; Parts III through VI present oceanographic data; Part VII presents nearshore profiles and bathymetry; and Part VIII, if included, documents special events that occurred at the FRF during the month.

Table 1 is a list of instruments used, their operational status during the month, and the data collection status. Figure 2 identifies the location of the instruments. The water depths at the wave gages and current meters vary and may be determined from information contained in Figure 7. Other installation information is contained in Table 1.

Times given in the report, unless otherwise specified, are referenced to eastern standard time (EST).

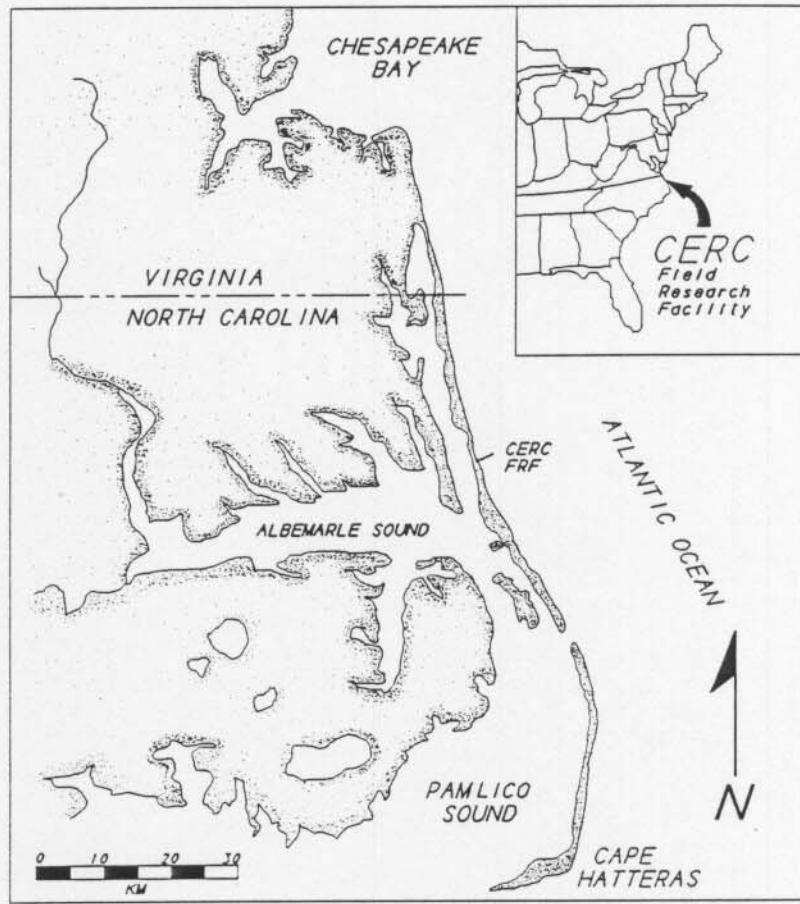


Table 1: Instrument Status/Data Availability

MAY 1992

Gage ID	Description/Remarks	Depth at Sensor		Day of the month																																		
				1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1				
616	Barometric Pressure		Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
			Data Collected	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
604	Precipitation		Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
			Data Collected	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
624	Air Temperature		Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
			Data Collected	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
932	Anemometer at seaward end of pier Elevation 19 m (NGVD)		Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
			Data Collected	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
645	Baylor staff at station 7+80 on FRF pier	see Figure 7	Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	/	-	-
			Data Collected	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
625	Baylor staff at station 18+60 on FRF pier	see Figure 7	Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
			Data Collected	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
111	Pressure gage 309 m north of FRF pier (0.9 km offshore)	Approx. 7.8 m NGVD	Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
			Data Collected	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
630	Waverider buoy 6.0 km offshore	Approx. 23 m NGVD	Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
			Data Collected	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
519	Current meter 320 m north of FRF pier (0.9 km offshore)	see Figure 7	Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
			Data Collected	/	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
865-1370	NOAA tide station at seaward end of FRF pier		Gage Status	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
			Data Collected	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Supplemental Observations (daily oceanographic and meteorological observations)				Daily observation	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	

Gage Status	Daily Observation	Analog Record	Data Collected
Operational = *	Complete = *	Complete = *	All = *
Partial = /	Partial = /	Partial = /	Partial = /
Non-Operational = -	None = -	None = -	None = -

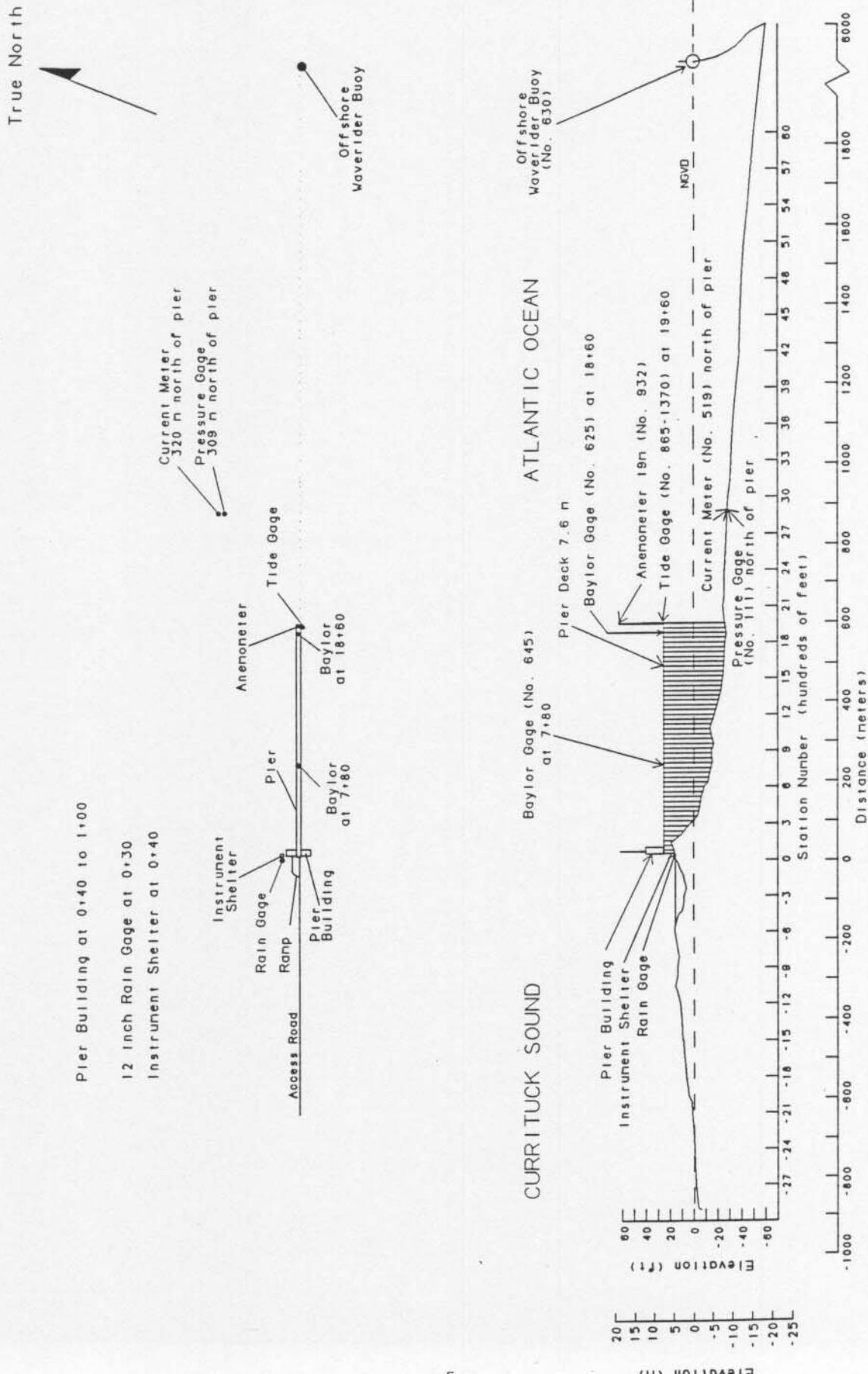


Figure 2. Instrument locations at FRF (all elevations from NGVD, all distances from FRF baseline).

PART II: METEOROLOGICAL DATA

A variety of instruments have been installed at the FRF (Figure 2) to monitor the meteorological conditions. The data presented in Table 2 are collected and stored using a Digital Equipment Corporation VAX 11/750. For each instrument identified in Table 1 as having analog outputs, chart records are obtained, a log is maintained and the records are stored for future reference.

Winds were measured at the end of the pier at an elevation of 19 m (Figure 2) using a Weather Measure Skyvane anemometer.

Monthly resultant wind speeds and directions are determined by vector averaging the data. Temperature and atmospheric pressure means are the average of the values presented for the month. Total precipitation is the sum for the month.

The following may be useful for converting the data in Table 2 to other frequently used units of measurement:

1. Millimeters (mm) to inches (in.) -
 $mm \times .03937 = in.$
2. Millibars (mb) to inches of mercury (in. Hg) -
 $mb \times 0.02953 = in. Hg$
3. Degrees Celsius (C) to degrees Fahrenheit (F) -
 $(C \times 9/5) + 32 = F$
4. Meters per second (m/s) to knots (kn) -
 $m/s \times 1.943 = kn$

Table 2: Meteorological Data

May 1992

Day	Hour	Wind	Wind	Temperature	Atm	Precipitation
		Speed m/sec	Direction deg TN	deg C	mb	mm
1	100	3	169	12.7	1011.9	0
	700	5	336	13.6	1014.7	0
	1300	3	60	15.2	1015.7	0
	1900	2	136	13.4	1016.2	0
2	100	4	194	14.1	1016.0	0
	700	7	219	16.7	1016.4	0
	1300	8	202	25.2	1012.5	0
	1900	9	194	21.1	1008.2	0
3	100	9	221	19.9	1006.9	0
	700	6	251	19.9	1006.4	0
	1300	4	11	18.9	1006.9	0
	1900	8	158	16.0	1004.9	0
4	100	4	243	18.0	1003.2	0
	700	10	352	14.7	1005.8	0
	1300	8	18	16.1	1007.1	0
	1900	3	99	12.4	1008.8	0
5	100	4	93	12.2	1008.8	0
	700	6	38	12.9	1010.0	0
	1300	10	37	10.9	1011.3	6
	1900	10	34	11.4	1012.8	0
6	100	12	28	10.8	1013.4	0
	700	13	20	11.0	1015.8	0
	1300	16	20	10.4	1017.9	0
	1900	16	29	10.1	1018.4	0
7	100	14	24	11.1	1017.8	0
	700	17	40	12.0	1016.3	0
	1300	15	30	12.1	1014.9	3
	1900	12	49	14.4	1012.8	15
8	100	7	89	16.6	1010.1	0
	700	3	169	16.9	1010.5	20
	1300	4	153	18.1	1011.0	0
	1900	5	177	16.4	1012.5	0
9	100	6	219	14.4	1013.8	0
	700	4	185	15.0	1015.7	0
	1300	9	134	17.1	1014.1	0
	1900	9	184	18.6	1012.8	0
10	100	2	296	15.4	1014.7	0
	700	6	293	14.5	1016.5	0
	1300	6	294	19.8	1016.2	0
	1900	0		15.5	1016.9	0
11	100	4	350	15.2	1017.1	0
	700	6	4	15.3	1019.1	0
	1300	10	1	15.1	1019.0	0
	1900	14	15	11.6	1018.2	0
12	100	11	12	11.4	1016.1	0
	700	11	6	11.8	1016.5	0
	1300	10	1	12.6	1015.4	0
	1900	7	355	12.1	1012.5	0
13	100	4	323	12.1	1010.3	0
	700	3	359	12.6	1009.5	0
	1300	2	60	16.3	1008.4	0
	1900	3	118	13.6	1007.6	0
14	100	3	158	14.5	1008.9	0
	700	5	229	17.3	1011.1	0
	1300	2	161	24.9	1012.0	0
	1900	6	153	18.1	1013.0	0
15	100	5	148	16.7	1015.0	0
	700	3	140	18.6	1017.3	0
	1300	5	87	20.8	1018.8	0
	1900	7	111	18.4	1019.0	0
16	100	3	109	18.0	1020.3	0
	700	1	172	19.6	1022.0	0
	1300	4	92	22.4	1022.7	0
	1900	4	75	18.4	1023.2	0

* electronic problems

(Continued)

(Sheet 1 of 2)

Table 2: Meteorological Data

May 1992

Day	Hour	Wind	Wind	Temperature	Atm	Precipitation
		Speed m/sec	Direction deg TN	deg C	mb	mm
17	100	7	12	16.3	1023.8	0
	700	7	18	15.7	1025.5	0
	1300	5	34	16.1	1024.8	0
	1900	4	19	14.7	1022.7	0
18	100	2	30	13.5	1021.4	0
	700	3	213	16.8	1020.5	0
	1300	3	151	24.5	1018.1	0
	1900	3	147	21.9	1017.2	0
19	100	5	353	20.0	1017.8	0
	700	8	35	16.4	1020.6	0
	1300	12	22	14.3	1022.3	0
	1900	14	21	13.0	1022.4	0
20	100	14	1	13.3	1021.8	0
	700	12	12	13.9	1022.6	0
	1300	12	17	14.4	1023.8	0
	1900	10	7	12.9	1024.3	0
21	100	7	1	13.8	1023.9	0
	700	8	20	14.1	1025.3	0
	1300	9	10	16.1	1025.5	0
	1900	5	10	14.5	1023.5	0
22	100	4	343	12.9	1021.7	0
	700	4	349	16.6	1021.8	0
	1300	3	358	21.2	1020.6	0
	1900	1	33	17.9	1017.7	0
23	100	2	285	16.7	1015.6	0
	700	3	277	19.8	1015.1	0
	1300	3	1	25.6	1012.8	0
	1900	0		20.2	1010.4	0
24	100	2	190	18.9	1008.4	0
	700	2	279	22.4	1007.3	0
	1300	1	73	28.0	1005.8	0
	1900	5	189	25.6	1005.1	0
25	100	10	4	15.5	1007.0	0
	700	12	13	12.5	1010.1	0
	1300	9	28	12.8	1011.6	0
	1900	7	23	12.3	1012.9	0
26	100	8	30	12.8	1011.9	0
	700	8	53	13.6	1011.0	0
	1300	5	40	15.0	1008.5	11
	1900	12	7	12.9	1009.2	0
27	100	9	359	12.8	1009.2	0
	700	10	355	12.1	1011.2	0
	1300	7	41	12.8	1012.5	0
	1900	3	64	12.0	1013.5	0
28	100	0		10.1	1014.8	0
	700	2	350	14.7	1017.5	0
	1300	5	65	16.1	1018.5	0
	1900	4	68	14.2	1019.0	0
29	100	5	73	14.5	1019.4	0
	700	6	85	14.8	1021.2	0
	1300	8	62	16.2	1021.2	0
	1900	8	78	15.2	1020.0	0
30	100	7	87	15.5	1018.9	0
	700	10	133	17.4	1018.9	0
	1300	8	137	17.5	1018.6	0
	1900	8	153	16.6	1017.4	0
31	100	8	148	16.4	1014.9	0
	700	5	149	17.6	1013.5	0
	1300	7	155	24.4	1011.2	11
	1900	4	15	18.2	1010.3	0
		Resultant 3	Mean 35	Mean 15.9	Total 1015.2	Total 66

PART III: WAVE DATA

Wave data are collected from two Baylor staff gages (Gages 625 and 645), a pressure wave gage (Gage 111) and a Waverider buoy (Gage 630) as shown in Table 1 and Figure 2. The data are collected, analyzed, and stored on optical disc using a Digital Equipment Corporation VAX 11/750 programmed to sample the wave gages every 3 hr. This report reflects the data collection periods of 0100, 0700, 1300, and 1900 EST. The results are based only on the first 34 minute record. The sampling rate is two times per second for five contiguous 34-min records.

Wave height H_{mo} is an energy-based statistic equal to four times the standard deviation of the sea surface elevations. Wave height reported from the pressure gage has been compensated for hydrodynamic attenuation using linear wave theory. Wave period is identified from the computation of a variance (energy) spectrum with 60 deg of freedom calculated from a 34-min record. Peak wave period T_p is defined as the period associated with the maximum energy in the spectrum. When this analysis is complete, the data are written to optical disc.

Table 3 presents the wave heights and periods for each wave record obtained at 6 hr intervals during the month. The monthly means and standard deviations from the means shown in Table 3 are average values computed from this data. Figure 3 is a time history of all H_{mo} and T_p values obtained for all gages.

Differences in wave periods between wave gages (Table 3 and Figure 3) may be the result of wave breaking, wave reformation, or the presence of multiple wave trains containing nearly equal energy.

Table 3: Wave Data

May 1992

Day	Hour	645		625		111		630	
		Baylor at 7+80	Hmo,m T.sec	Baylor at 18+60	Hmo,m T.sec	Pressure Gage	Hmo,m T.sec	Offshr Wvdr	Hmo,m T.sec
1	0100	0.93	11.64	1.62	11.13	1.40	12.19	1.56	10.67
	0700	0.82	11.64	1.12	11.64	1.24	11.64	1.25	11.13
	1300	0.91	11.13	1.25	12.19	1.32	11.64	1.30	12.19
	1900	0.94	12.80	1.24	12.19	1.37	11.64	1.26	12.19
2	0100	0.79	12.80	1.15	13.47	1.26	12.80	1.16	12.80
	0700	0.71	12.80	0.97	12.19	1.09	11.64	1.11	11.13
	1300	0.46	11.64	0.81	11.64	0.87	10.67	0.89	11.64
	1900	0.43	11.64	0.57	11.64	0.56	11.13	0.67	10.67
3	0100	0.32	11.64	0.49	11.13	0.46	11.13	0.53	11.13
	0700	0.36	7.31	0.34	10.67	0.38	10.24	0.44	10.67
	1300	0.33	2.54	0.38	10.24	0.36	10.67	0.46	10.24
	1900	0.30	6.92	0.36	10.67	0.32	10.67	0.38	9.85
4	0100	0.20	7.31	0.33	9.85	0.32	9.85	0.38	9.14
	0700	0.82	4.13	0.91	4.20	0.86	4.20	1.17	4.27
	1300	0.56	4.57	0.79	4.74	0.76	4.41	0.87	4.74
	1900	0.38	4.57	0.49	4.66	0.43	4.66	0.66	4.41
5	0100	0.17	5.33	0.39	5.45	0.38	6.09	0.44	5.22
	0700	0.47	4.34	0.52	4.34	0.43	4.27	0.51	4.34
	1300	0.67	4.20	1.09	4.20	1.12	4.41	1.28	4.57
	1900	1.10	5.22	1.39	5.57	1.27	5.12	1.49	5.45
6	0100	1.33	5.45	1.79	5.69	1.73	6.92	1.94	5.33
	0700	1.67	6.74	2.04	6.56	2.18	6.56	2.46	6.92
	1300	1.81	7.53	2.35	8.00	2.53	7.76	2.94	6.92
	1900	1.96	8.83	2.62	8.83	2.90	8.26	3.06	8.53
7	0100	1.92	9.48	2.71	8.26	3.23	9.14	3.16	8.83
	0700	1.81	10.67	2.83	10.24	3.32	10.67	3.37	10.24
	1300	1.84	10.67	2.99	9.48	3.34	10.24	3.51	10.67
	1900	1.76	9.48	2.55	10.24	2.78	9.85	3.09	9.85
8	0100	1.63	7.31	2.02	11.13	2.08	11.13	2.45	10.67
	0700	1.69	10.24	2.02	9.85	2.20	8.53	2.79	9.48
	1300	1.43	8.53	1.75	8.83	1.80	9.14	1.98	9.85
	1900	0.68	8.00	1.37	8.26	1.38	9.48	1.76	8.83
9	0100	0.91	7.76	1.23	9.14	1.41	9.48	1.44	9.14
	0700	0.56	8.53	1.09	8.26	1.11	8.53	1.29	9.14
	1300	0.78	7.76	1.00	8.53	1.02	8.00	1.24	8.00
	1900	0.42	8.00	0.80	8.00	0.83	8.53	1.06	8.83
10	0100	0.45	8.00	0.73	8.26	0.77	8.26	0.81	8.26
	0700	0.30	8.26	0.54	8.00	0.57	8.00	0.73	8.53
	1300	0.38	7.76	0.54	8.26	0.49	8.00	0.64	7.53
	1900	0.16	8.26	0.41	8.53	0.42	7.53	0.49	8.26
11	0100	0.23	7.53	0.36	7.76	0.36	7.76	0.41	7.76
	0700	0.21	2.25	0.43	2.41	0.36	8.26	0.47	7.53
	1300	0.74	4.74	0.90	4.57	0.85	4.49	1.47	4.74
	1900	1.48	6.40	1.74	6.24	1.92	6.24	2.43	6.74
12	0100	1.64	7.53	1.92	7.31	2.01	8.00	2.24	7.76
	0700	1.25	9.14	1.66	9.85	1.80	9.85	2.34	9.85
	1300	1.26	9.85	1.67	9.14	1.64	9.48	1.90	9.48
	1900	1.07	9.85	1.38	9.14	1.40	9.14	1.49	8.83
13	0100	1.00	10.24	1.32	10.24	1.39	10.24	1.43	9.85
	0700	0.73	10.24	1.07	10.67	1.14	10.67	1.14	10.24
	1300	0.49	9.14	0.91	9.48	1.00	9.14	1.11	9.14
	1900	0.49	9.85	0.83	9.14	0.87	9.14	0.92	9.14
14	0100	0.20	11.13	0.79	9.85	0.83	9.48	0.88	9.14
	0700	0.37	10.24	0.67	10.24	0.76	9.48	0.80	9.48
	1300	0.16	9.85	0.64	9.85	0.68	9.85	0.68	9.85
	1900	0.34	10.24	0.66	10.24	0.66	9.85	0.70	8.53
15	0100	0.20	10.67	0.57	10.67	0.62	10.67	0.61	9.48
	0700	0.29	10.24	0.50	10.24	0.55	10.67	0.58	10.24
	1300	0.23	8.53	0.48	8.26	0.49	9.14	0.56	9.85
	1900	0.36	9.85	0.52	9.48	0.49	9.14	0.56	8.26
16	0100	0.30	10.67	0.49	7.76	0.56	9.14	0.64	9.14
	0700	0.43	9.85	0.64	9.48	0.65	10.24	0.67	10.67
	1300	0.31	9.85	0.64	9.85	0.68	9.48	0.73	9.85
	1900	0.39	9.48	0.76	9.85	0.79	9.14	0.87	9.48

* Electronic problems

(Continued)

(Sheet 1 of 2)

Table 3: Wave Data

May 1992

Day	Hour	645		625		111		630	
		Baylor at 7+80	Hmo, m	T, sec	Baylor at 18+60	Hmo, m	T, sec	Pressure Gage	Hmo, m
17	0100	0.52	2.51	0.76	9.48	0.74	9.85	0.83	9.85
	0700	0.60	9.14	0.83	9.14	0.87	8.83	0.97	9.48
	1300	0.47	9.85	0.84	9.14	0.88	9.48	0.93	9.48
	1900	0.49	9.14	0.87	9.14	0.87	8.83	0.99	8.83
18	0100	0.38	10.67	0.84	9.14	0.93	9.48	0.92	9.14
	0700	0.52	9.85	0.87	8.83	0.87	9.14	0.96	8.53
	1300	0.35	9.85	0.87	11.13	0.89	9.85	0.92	9.48
	1900	0.52	9.14	0.92	10.24	0.90	10.24	1.06	10.24
19	0100	0.25	9.48	0.88	10.24	0.89	10.24	1.02	10.67
	0700	0.75	9.85	1.08	9.85	1.01	8.83	1.09	10.24
	1300	1.00	5.57	1.59	5.12	1.57	5.33	1.76	5.45
	1900	1.48	6.56	2.08	8.53	2.18	9.14	2.36	9.48
20	0100	1.29	6.56	1.89	8.83	2.17	8.83	2.01	9.85
	0700	1.38	5.95	1.93	5.69	2.13	8.83	2.10	8.83
	1300	1.22	8.83	1.77	10.67	1.96	9.85	1.93	6.74
	1900	1.30	6.09	1.82	8.53	1.88	10.24	1.96	8.26
21	0100	1.21	10.24	1.57	11.64	1.69	11.64	1.77	10.24
	0700	0.82	10.67	1.55	10.24	1.56	11.13	1.56	10.24
	1300	0.81	11.13	1.46	10.24	1.53	10.67	1.59	8.83
	1900	0.74	11.13	1.52	11.13	1.67	9.85	1.78	9.14
22	0100	0.92	9.85	1.42	10.67	1.58	10.24	1.64	10.24
	0700	0.95	10.67	1.46	10.67	1.58	10.67	1.55	9.85
	1300	0.69	10.67	1.24	10.67	1.31	9.85	1.37	10.67
	1900	0.36	9.48	1.19	9.85	1.17	9.85	1.27	9.85
23	0100	0.87	10.67	1.27	10.67	1.31	10.67	1.51	10.24
	0700	0.49	10.67	1.09	9.14	1.18	10.24	1.30	10.24
	1300	0.58	10.67	1.05	9.85	1.06	10.24	1.21	10.24
	1900	0.30	9.85	0.99	9.48	0.95	9.85	1.10	9.85
24	0100	0.64	9.85	0.93	10.24	0.98	10.24	1.09	10.24
	0700	0.27	10.24	0.89	10.24	0.84	10.24	0.98	9.48
	1300	0.45	9.85	0.86	9.85	0.83	9.85	0.92	9.85
	1900	0.19	9.85	0.78	9.48	0.78	9.14	0.81	8.83
25	0100	0.85	3.71	1.02	9.14	1.00	9.14	0.98	9.14
	0700	1.24	6.09	1.68	5.82	1.81	6.09	1.85	6.09
	1300	1.11	6.74	1.38	7.53	1.40	7.31	1.69	7.53
	1900			1.18	8.83	1.26	8.26	1.42	8.53
26	0100			1.22	7.53	1.13	7.76	1.27	8.26
	0700			1.12	8.26	1.12	8.53	1.23	8.26
	1300			1.04	8.00	1.02	7.76	1.02	8.26
	1900			1.39	5.33	1.40	5.33	1.67	5.02
27	0100			1.34	6.24	1.36	6.74	1.64	6.92
	0700			1.25	7.53	1.32	7.11	1.43	6.92
	1300			1.23	6.92	1.27	7.11	1.37	7.11
	1900			1.05	7.31	1.08	8.53	1.17	8.83
28	0100	Gage		0.90	8.83	1.00	8.83	1.12	8.83
	0700	Inoperative		0.81	9.14	0.83	9.48	0.87	9.14
	1300			0.79	8.53	0.80	9.48	0.78	8.26
	1900			0.64	8.26	0.67	7.76	0.78	8.26
29	0100			0.62	8.26	0.65	8.83	0.72	8.53
	0700			0.66	8.00	0.61	8.83	0.70	8.26
	1300			0.81	8.00	0.71	8.26	0.90	8.00
	1900			0.92	3.66	0.74	8.00	0.98	8.00
30	0100			0.85	4.20	0.76	4.06	0.93	4.49
	0700			0.87	7.31	0.81	3.71	1.07	4.57
	1300			0.93	6.40	0.93	6.24	1.15	6.40
	1900			0.90	6.40	0.83	6.92	1.15	6.74
31	0100			0.81	6.24	0.79	6.40	0.96	6.40
	0700			0.76	6.09	0.77	6.24	0.90	6.09
	1300			0.70	5.82	0.70	5.82	0.86	6.09
	1900			0.79	6.24	0.80	7.53	0.89	6.40
Mean		0.76	8.68	1.11	8.66	1.15	8.78	1.28	8.65
Std dev		0.48	2.38	0.56	2.10	0.63	1.92	0.67	1.85

* Electronic problems

(Sheet 2 of 2)

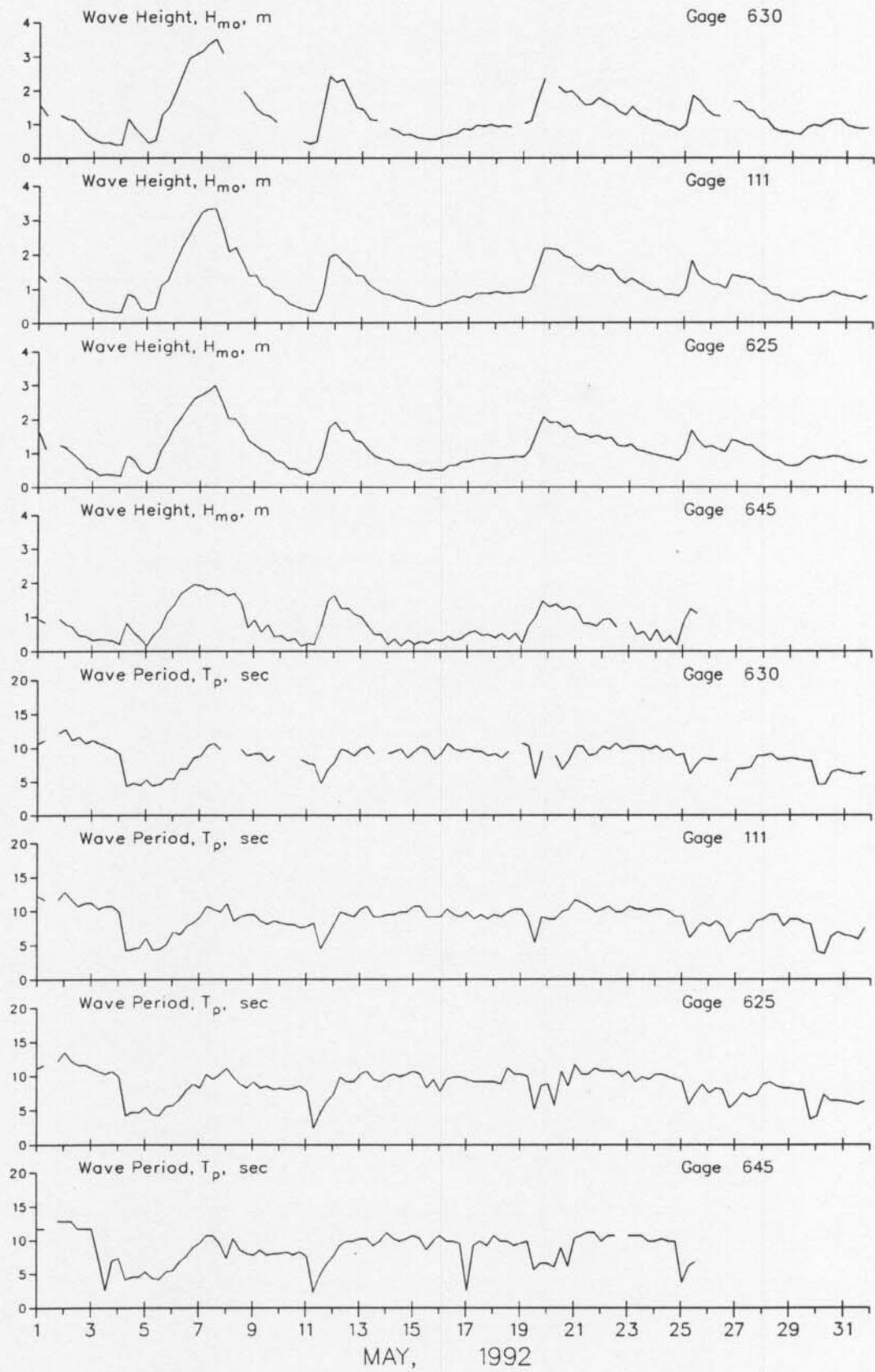


Figure 3. Time history of wave heights and periods

PART IV: CURRENT DATA

Current data (Table 4) are collected from a Marsh-McBirney electromagnetic biaxial current meter (Table 1 and Figure 2) and by visually observing the movement of dye on the water surface in the surf and at the seaward end of the pier, as well as 500 m updrift of the pier 12 m offshore.

Since the shoreline orientation is approximately N20W, longshore currents flow either toward 340 deg (i.e. northward) or toward 160 deg (i.e. southward). Similarly, cross-shore currents are either onshore (westward) or offshore (eastward).

All current speeds are given in centimeters per second (cm/sec). Resultant speeds and directions are determined by vector averaging the data.

IMPORTANT NOTE

Direction resultants regarding the current meter data (gages 519 and 529) may be in error by minus 19 or 20 degrees. Despite our efforts, we have yet to determine the cause of this error. Please call us if you must use this data.

Table 4: Current Data
May 1992

Day	Pier Measurements				Beach Measurements (500m Updrift)				Current Meter	
	Alongshore Cross-shore Resultant	Dye at (579 m) (surface)	Distance from Baseline (m)	Speed	Dir	Dye 12m offshore (surface)	Location	Speed	Dir	0.9 km Offshore Depth -5.6m (NGVD) ID #519
1 0100-Along Cross Result										10 N
1 0700-Along Cross Result	0 2 2	off off 70	140	87 0 87	N 340		South	24	S	5 on 11 311
1 1300-Along Cross Result										
1 1900-Along Cross Result										1 S 6 on 6 240
2 0100-Along Cross Result										0 2 on 2 250
2 0700-Along Cross Result	20 12 24	N off 11	198	4 5 6	N off 30		South	26	N	8 N 6 on 10 302
2 1300-Along Cross Result										17 N 6 on 18 319
2 1900-Along Cross Result										22 N 9 on 23 318
3 0100-Along Cross Result										15 N 11 on 18 305
3 0700-Along Cross Result	10 5 11	S off 136	136	12 4 13	S off 143		North	0		9 N 6 on 11 308
3 1300-Along Cross Result										5 S 5 off 7 115
3 1900-Along Cross Result										4 S 5 off 6 109
4 0100-Along Cross Result										4 S 0 4 160
4 0700-Along Cross Result	38 0 38	S 140 160		23 1 23	S on 163		North	86	S	21 S 6 off 22 143
4 1300-Along Cross Result										20 S 7 off 21 140
4 1900-Along Cross Result										29 S 22 off 36 122
5 0100-Along Cross Result										18 S 6 off 19 140
5 0700-Along Cross Result	23 7 24	S off 143	134	13 3 14	S on 174		North	21		28 S 4 off 28 152
5 1300-Along Cross Result										34 S 12 off 36 141
5 1900-Along Cross Result										23 S 6 off 24 145

KEY = All speeds in cm/sec

N = Northward, Shore parallel

S = Southward, Shore parallel

on = onshore off = offshore

Table 4: Current Data (Continued)
May 1992

Day	Alongshore Cross-shore Resultant ---- Time	Pier Measurements				Beach Measurements (500m Updrift)			Current Meter		
		Dye at (579 m) (surface)	Speed	Dir	Dye at Mid-Surf Zone (surface)	Distance from Baseline (m)	Speed	Dir	Dye 12m offshore (surface)	Location	Speed
6 0100-Along	Cross Result										0.9 km Offshore Depth -5.6m (NGVD) ID #519
6 0700-Along	Cross Result	51 15 53	S on 177		203 0 203	140	S 160		74	S	46 18 49 58 17 60
6 1300-Along	Cross Result								North		72 22 75
6 1900-Along	Cross Result										70 24 74
7 0100-Along	Cross Result										73 27 77
7 0700-Along	Cross Result	68 27 73	S on 182		152 76 170	140	S on 187		38	S	65 28 70
7 1300-Along	Cross Result										79 32 85
7 1900-Along	Cross Result										45 21 50
8 0100-Along	Cross Result										35 13 38
8 0700-Along	Cross Result	0 4 4			55 28 62	140	N on 313		5	N	28 8 29
8 1300-Along	Cross Result								South		22 9 24
8 1900-Along	Cross Result										14 1 14
9 0100-Along	Cross Result										3 3 4
9 0700-Along	Cross Result	23 20 30	N off 22		25 0 25	215	N 340		19	N	10 3 10
9 1300-Along	Cross Result								South		11 4 11
9 1900-Along	Cross Result										24 10 26
10 0100-Along	Cross Result										16 3 16
10 0700-Along	Cross Result	9 1 9	S off 154		6 8 10	177	S off 104		21	N	8 2 9
10 1300-Along	Cross Result								North		5 7 9
10 1900-Along	Cross Result										10 2 10

KEY = All speeds in cm/sec

N = Northward, Shore parallel

S = Southward, Shore parallel

on = onshore off = offshore

Table 4: Current Data (Continued)
May 1992

Day	Alongshore Cross-shore Resultant Time	Pier Measurements				Beach Measurements (500m Updrift)			Current Meter	
		Dye at (579 m) (surface)	Dye at Mid-Surf Zone (surface)	Distance from Baseline (m)	Speed	Dir	Dye 12m offshore (surface)	Location	Speed	Dir
11 0100	Along Cross Result								8	N
									0	
									8	340
11 0700	Along Cross Result	12 0 12	S 0 160	140	10 0 10	S 0 160	13	N	1 8 8	S off 75
11 1300	Along Cross Result								46 16 49	S off 141
11 1900	Along Cross Result								69 22 73	S off 143
12 0100	Along Cross Result								57 17 59	S off 144
12 0700	Along Cross Result	51 0 51	S 0 160	140	68 0 68	S 0 160	45	S	61 20 64	S off 142
12 1300	Along Cross Result								36 9 38	S off 146
12 1900	Along Cross Result								32 9 33	S off 144
13 0100	Along Cross Result								15 2 15	S off 151
13 0700	Along Cross Result	25 4 26	S off 151	140	18 26 32	S off 106	17	N	16 8 18	S off 134
13 1300	Along Cross Result								2 2 2	N off 23
13 1900	Along Cross Result								13 1 13	N off 344
14 0100	Along Cross Result								20 8 22	N on 319
14 0700	Along Cross Result	24 7 25	N off 357	140	30 0 30	N 0 340	15	N	11 2 12	N on 329
14 1300	Along Cross Result								20 3 20	N on 331
14 1900	Along Cross Result								12 1 12	N off 343
15 0100	Along Cross Result								15 2 15	N on 333
15 0700	Along Cross Result	24 0 24	N 0 340	140	11 4 11	N on 321	15	N	7 2 7	N on 327
15 1300	Along Cross Result								1 2 2	N off 45
15 1900	Along Cross Result								21 9 23	S off 136

KEY = All speeds in cm/sec
 N = Northward, Shore parallel
 S = Southward, Shore parallel
 on = onshore off = offshore

Table 4: Current Data (Continued)
May 1992

Alongshore Cross-shore Resultant Time Day	Pier Measurements						Beach Measurements (500m Updrift)			Current Meter	
	Dye at (579 m) (surface)	Distance from Baseline (m)	Dye at Mid-Surf Zone (surface)	Location	Dye 12m offshore (surface)	Speed	Dir	0.9 km Offshore Depth -5.6m (NGVD) ID #519	Speed	Dir	
16 0100-Along Cross Result									8	S	
16 0700-Along Cross Result	55 0 55	S 160	174	North	57 N	28 10 30			3 off 139		
16 1300-Along Cross Result									23 6 24	S off 145	
16 1900-Along Cross Result									12 7 14	S off 129	
17 0100-Along Cross Result									20 8 22	S off 138	
17 0700-Along Cross Result	34 0 34	S 160	162	North	15 N	29 14 32			29 off 135		
17 1300-Along Cross Result									31 13 33	S off 137	
17 1900-Along Cross Result									35 13 38	S off 140	
18 0100-Along Cross Result									27 11 29	S off 139	
18 0700-Along Cross Result	12 12 17	N off 25	140	South	10 N	3 0 3			3 160	S	
18 1300-Along Cross Result									3 4 5	S off 113	
18 1900-Along Cross Result									16 3 16	N on 331	
19 0100-Along Cross Result									3 2 3	N off 10	
19 0700-Along Cross Result	12 6 14	S on 187	140	South	17 S	14 15 20			15 off 114	S	
19 1300-Along Cross Result									35 15 38	off 138	
19 1900-Along Cross Result									45 15 47	S off 142	
20 0100-Along Cross Result									57 19 60	S off 142	
20 0700-Along Cross Result	102 20 104	S on 171	140	North	24 S	44 18 48			off 138	S	
20 1300-Along Cross Result									56 18 59	off 143	
20 1900-Along Cross Result									8 3 8	S on 177	

KEY = All speeds in cm/sec
 N = Northward, Shore parallel
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 on = onshore off = offshore

Table 4: Current Data (Continued)
May 1992

Day	Time	Pier Measurements				Beach Measurements			Current Meter	
		Alongshore Cross-shore Resultant		Dye at Mid-Surf Zone (surface)		(500m Updrift)			0.9 km Offshore Depth -5.6m (NGVD) ID #519	
		Dye at (579 m) (surface)	Distance from Baseline (m)	Speed	Dir	Dye 12m offshore (surface)	Location	Speed	Dir	
21	0100-Along Cross Result							39	S	
								9	off	
								40	147	
21	0700-Along Cross Result	20 12 24	S off 129	140	30 46 55	S on 216	South	3	N	12
								13	off	
								18	113	
21	1300-Along Cross Result									35
										12
										36
21	1900-Along Cross Result									142
										31
										5
										off
										32
										152
22	0100-Along Cross Result							5	S	
								3	on	
								6	195	
22	0700-Along Cross Result	0 10 10		140	47 14 49	N on 323	South	23	N	26
								11	off	
								28	137	
22	1300-Along Cross Result									40
										20
										44
22	1900-Along Cross Result									133
										30
										21
										36
23	0100-Along Cross Result									125
										19
										6
										off
										20
23	0700-Along Cross Result	27 15 30	S on 189	213	0 0 0		North	52	N	5
								1	off	
								5	356	
23	1300-Along Cross Result									4
										1
										4
23	1900-Along Cross Result									327
										9
										on
										9
24	0100-Along Cross Result									323
										15
										N
										1
										off
24	0700-Along Cross Result	47 0 47	S off 160	179	9 3 10	N on 323	South	17	N	15
								9	N	
								1	off	
								9	345	
24	1300-Along Cross Result									1
										S
										2
										off
										88
24	1900-Along Cross Result									0
										3
										off
										70
25	0100-Along Cross Result									3
										29
										off
										12
										31
25	0700-Along Cross Result	55 0 55	S off 160	189	68 0 68	S on 160	North	81	S	52
								20	S	
								56	off	
								47	139	
25	1300-Along Cross Result									47
										12
										off
										48
25	1900-Along Cross Result									146
										45
										off
										47
										143

KEY = All speeds in cm/sec

N = Northward, Shore parallel

S = Southward, Shore parallel

on = onshore off = offshore

Table 4: Current Data (Continued)
May 1992

Day	Alongshore Cross-shore Resultant ---- Time	Pier Measurements						Beach Measurements			Current Meter		
		Dye at (579 m) (surface)	Speed	Dir	Dye at Mid-Surf Zone (surface)	Distance from Baseline (m)	Speed	Dir	(500m Updrift)	Dye 12m offshore (surface)	Location	Speed	Dir
26	0100-Along Cross Result											29	S
												9	off
												30	144
26	0700-Along Cross Result	41	S		177		25	S		21	S	20	S
		0					5	off				4	off
		41	160				26	149				20	148
26	1300-Along Cross Result											20	S
												3	off
												21	151
26	1900-Along Cross Result											48	S
												13	off
												50	145
27	0100-Along Cross Result											10	S
												2	on
												10	172
27	0700-Along Cross Result	51	S		165		61	S		34	S	39	S
		0					6	off				7	off
		51	160				61	154				39	150
27	1300-Along Cross Result											36	S
												10	off
												37	144
27	1900-Along Cross Result											18	S
												0	
												18	160
28	0100-Along Cross Result											6	N
												1	off
												6	350
28	0700-Along Cross Result	3	S		189		0			8	N	7	S
		3	off				35	off				4	off
		4	118				35	70				8	131
28	1300-Along Cross Result											3	S
												7	off
												7	93
28	1900-Along Cross Result											6	S
												3	off
												7	138
29	0100-Along Cross Result											21	S
												3	off
												21	151
29	0700-Along Cross Result	21	S		140		36	N		20	N	7	S
		6	on				11	on				8	off
		22	177				37	323				11	112
29	1300-Along Cross Result											11	S
												3	off
												12	143
29	1900-Along Cross Result											19	S
												14	off
												23	124
30	0100-Along Cross Result											4	S
												14	off
												14	85
30	0700-Along Cross Result	47	N		152		55	N		15	N	7	S
		0					50	on				5	off
		47	340				75	298				8	127
30	1300-Along Cross Result											3	N
												1	on
												3	313
30	1900-Along Cross Result											1	N
												1	on
												2	302

KEY = All speeds in cm/sec
 N = Northward, Shore parallel
 S = Southward, Shore parallel
 on = onshore off = offshore

Table 4: Current Data (Concluded)
May 1992

Day	Time	Pier Measurements				Beach Measurements			Current Meter	
		Alongshore Cross-shore Resultant	Dye at (579 m) (surface)	Distance from Baseline (m)	Speed	Dir	Dye 12m offshore (surface)	Location	Speed	Dir
31	0100-Along Cross Result								6	N
									3	on
									7	310
31	0700-Along Cross Result	18 8 20	N off 4	142	61 6 61	N on 334	49	N	2 2 3	N on 292
									5	N
									2	on
									5	321
31	1300-Along Cross Result								6	N
									2	on
									6	325

KEY = All speeds in cm/sec
 N = Northward, Shore parallel
 S = Southward, Shore parallel
 on = onshore off = offshore

PART V: SUPPLEMENTAL OBSERVATIONS

Visual wave direction measurements (Table 5) of both the primary wave train (i.e. that having the larger wave heights) and the secondary wave train (which must be clearly distinguishable as a wave train separate from the primary waves but not surface chop or capillary waves) are taken daily at the seaward end of the pier. The direction of the primary wave train just north of the seaward end of the pier is also determined using a Raytheon Marine Pathfinder radar and measuring the alignment of the wave crests at approximately the same location as the visual measurements. The pier axis (considered perpendicular to the beach at the FRF) is oriented 70 deg east of true north; consequently, wave angles greater than 70 deg indicate that the waves were coming from the south side of the pier.

The width of the surf zone (seawardmost breaker position to shoreline) is determined from the pier deck.

Measurements of surface water temperature, density, and visibility are also taken daily at the seaward end of the pier. A jar along with a thermometer is lowered about 0.3 m into the water and allowed to remain for at least one minute. The jar is removed, the temperature read, and a hydrometer is used to determine the density. A Secchi disc is used to determine the surface visibility.

Table 5: Supplemental Observations

May 1992

Day	Time	Wave Approach		Radar Wave Angle deg from True N	Width of Surf Zone, m	Water Characteristics at Pier End		
		Primary	Secondary			Temp., C	Density g/cc	Secchi Vis., m
1	0557	80			90	12.2	1.0238	0.6
2	0830	55	130	70	84	12.8	1.0240	1.2
3	0910	100	5		14	11.7	1.0252	1.5
4	0654	30		30	33	11.7	1.0251	0.9
5	0729	40		50	21	14.4	1.0219	1.8
6	0715	50		50	270	13.9	1.0209	0.9
7	0706	65		65	451	10.6	1.0211	0.9
8	0732	75	70		396	12.8	1.0226	0.6
9	0810	85			99	12.8	1.0236	1.2
10	0845	85	20		53	12.8	1.0241	0.6
11	0613	20			45	13.3	1.0238	1.2
12	0700	40		60	287	15.0	1.0196	0.6
13	0707	65		80	98	14.4	1.0194	0.6
14	0723	70			87	15.0	1.0200	0.6
15	0716	70			53	13.9	1.0232	1.8
16	0900	80			55	18.3	1.0196	1.5
17	0845	65	0	95	50	17.8	1.0182	1.5
18	0718	85			64	15.6	1.0180	1.2
19	0702	80	50	85	73	16.7	1.0200	1.8
20	0745	50	70	60	272	15.0	1.0201	0.6
21	0625	90		90	221	15.0	1.0193	0.3
22	0634	80			230	14.4	1.0218	0.3
23	0930	80			169	17.8	1.0182	2.1
24	0900	85			83	20.0	1.0172	1.8
25	0930	30		40	168	20.0	1.0180	0.9
26	0755	45		65	122	18.3	1.0178	0.9
27	0700	55		55	127	14.4	1.0214	0.6
28	0830	75			117	15.6	1.0226	1.2
29	0800	75		75	54	16.1	1.0202	1.2
30	0850	105		80	88	16.7	1.0202	1.5
31	0840	95			54	14.4	1.0236	1.2

PART VI: WATER LEVELS

Since 1978, the National Oceanic and Atmospheric Administration (NOAA)/National Ocean Service (NOS) has operated a primary tide station (No. 865-1370) at the seaward end of the FRF pier. A Leupold-Stevens digital recording float-type tide gage is used to collect instantaneous water level data every 6 minutes throughout the month.

The variation in water level during the month is shown in Figure 4 along with a list of mean and extreme values. This presentation is useful in identifying effects of both meteorological and astronomical forces on the open coast water level.

Table 6 contains the time at the center of each 12.42-hr tidal cycle and the range, high, low, and mean water levels during each tidal cycle.

FRF Tide Heights

May 1992

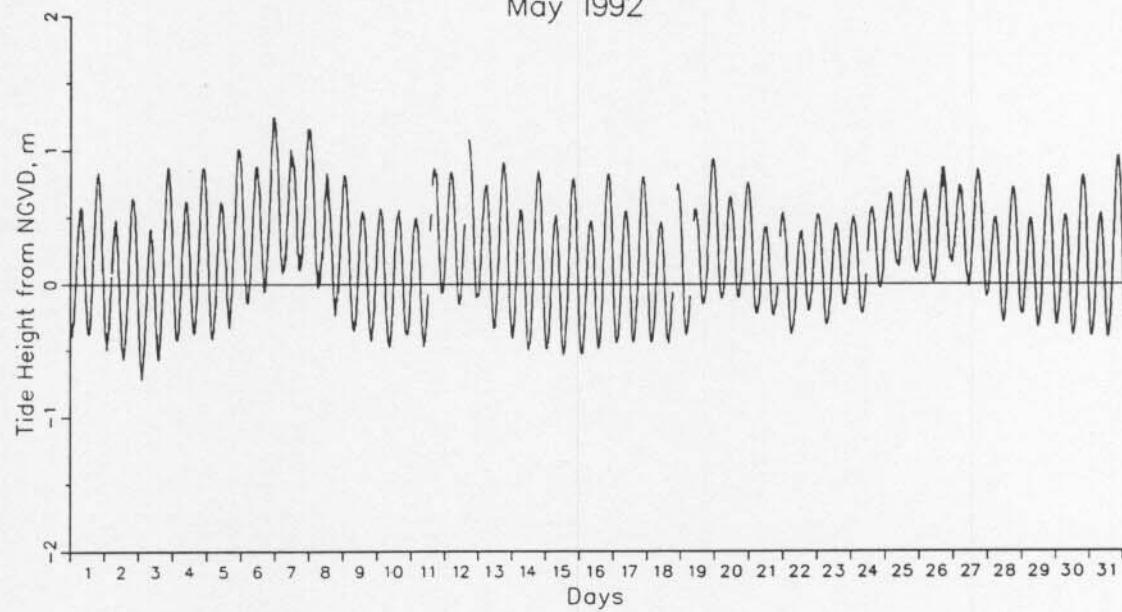


Figure 4. Water level time history

Monthly Water Levels,m NGVD

Extreme Low = -0.72 on day 3 at 136 EST
Extreme High = 1.25 on day 6 at 2142 EST
Monthly Mean = 0.22
Mean Low = -0.31
Mean High = 0.71
Mean Range = 1.02

Table 6: Water Levels, m NGVD

May 1992						
	Mid-Cycle Day	Time	Low	High	Mean	Range
	1	930	-0.39	0.59	0.07	0.98
	1	2155	-0.50	0.84	0.22	1.33
	2	1020	-0.57	0.48	-0.05	1.05
	2	2245	-0.72	0.65	0.04	1.37
	3	1110	-0.70	0.41	-0.13	1.11
	3	2336	-0.45	0.88	0.22	1.33
	4	1201	-0.42	0.62	0.09	1.05
	5	26	-0.41	0.87	0.27	1.29
	5	1251	-0.38	0.62	0.13	1.00
	6	116	-0.22	1.01	0.43	1.24
	6	1342	-0.10	0.88	0.39	0.98
	7	207	0.02	1.25	0.66	1.23
	7	1432	0.10	1.01	0.53	0.91
	8	257	-0.03	1.16	0.63	1.19
	8	1522	-0.24	0.83	0.30	1.07
	9	348	-0.34	0.82	0.28	1.16
	9	1613	-0.43	0.55	0.09	0.98
	10	438	-0.45	0.57	0.08	1.02
	10	1703	-0.48	0.56	0.06	1.04
	11	528	-0.47	0.50	0.05	0.98
	11	1754				
	12	619	-0.15	0.84	0.39	0.99
	12	1844				
	13	709	-0.28	0.74	0.27	1.02
	13	1934	-0.33	0.91	0.30	1.24
	14	800	-0.49	0.56	0.05	1.05
	14	2025	-0.50	0.85	0.20	1.34
	15	850	-0.52	0.52	-0.02	1.04
	15	2115	-0.54	0.79	0.15	1.33
	16	940	-0.53	0.47	-0.02	1.00
	16	2205	-0.49	0.83	0.20	1.31
	17	1031	-0.44	0.55	0.05	0.99
	17	2256	-0.43	0.81	0.20	1.23
	18	1121	-0.44	0.47	0.00	0.91
	18	2346				
	19	1211				
	20	37	-0.14	0.94	0.41	1.08
	20	1302	-0.11	0.66	0.26	0.77
	21	127	-0.22	0.76	0.31	0.98
	21	1352	-0.24	0.43	0.09	0.67
	22	217				
	22	1443	-0.36	0.40	0.05	0.76
	23	308	-0.31	0.52	0.15	0.83
	23	1533	-0.30	0.45	0.10	0.75
	24	358	-0.22	0.51	0.16	0.73
	24	1623				
	25	449	-0.02	0.68	0.36	0.71
	25	1714	0.10	0.85	0.49	0.75
	26	539	0.02	0.71	0.36	0.69
	26	1804	0.01	0.87	0.47	0.86
	27	629	-0.02	0.74	0.39	0.75
	27	1855	-0.09	0.86	0.42	0.94
	28	720	-0.29	0.50	0.14	0.79
	28	1945	-0.27	0.73	0.26	0.99
	29	810	-0.32	0.49	0.09	0.82
	29	2035	-0.31	0.81	0.28	1.12
	30	901	-0.38	0.52	0.07	0.90
	30	2126	-0.39	0.81	0.25	1.20
	31	951	-0.40	0.53	0.05	0.94
	31	2216	-0.35	0.96	0.39	1.31

PART VII: NEARSHORE PROFILES

A. Nearshore Profiles. In order to document profile response away from the pier, surveys of four profile lines extending 900 to 1,000 m from shore and located 489 and 581 m north and 517 and 608 m south of the FRF pier are conducted bi-weekly, after storms, and during more complete bathymetric surveys.

These profiles are obtained using the CRAB-Geodimeter surveying system; a Geodimeter 140-T self-tracking, electronic theodolite, distance meter, in combination with the Coastal Research Amphibious Buggy (CRAB), a 10.7 m high, self-powered, mobile tripod on wheels.

Figure 5 shows the last survey in March 1992 and the surveys in May 1992 on profile line 188, located 517 m south of the pier.

The profile envelope (Figure 6) reflects the maximum changes that occurred on the profile during 1992. Cross-hatched areas indicate changes to the annual envelope which occurred in May.

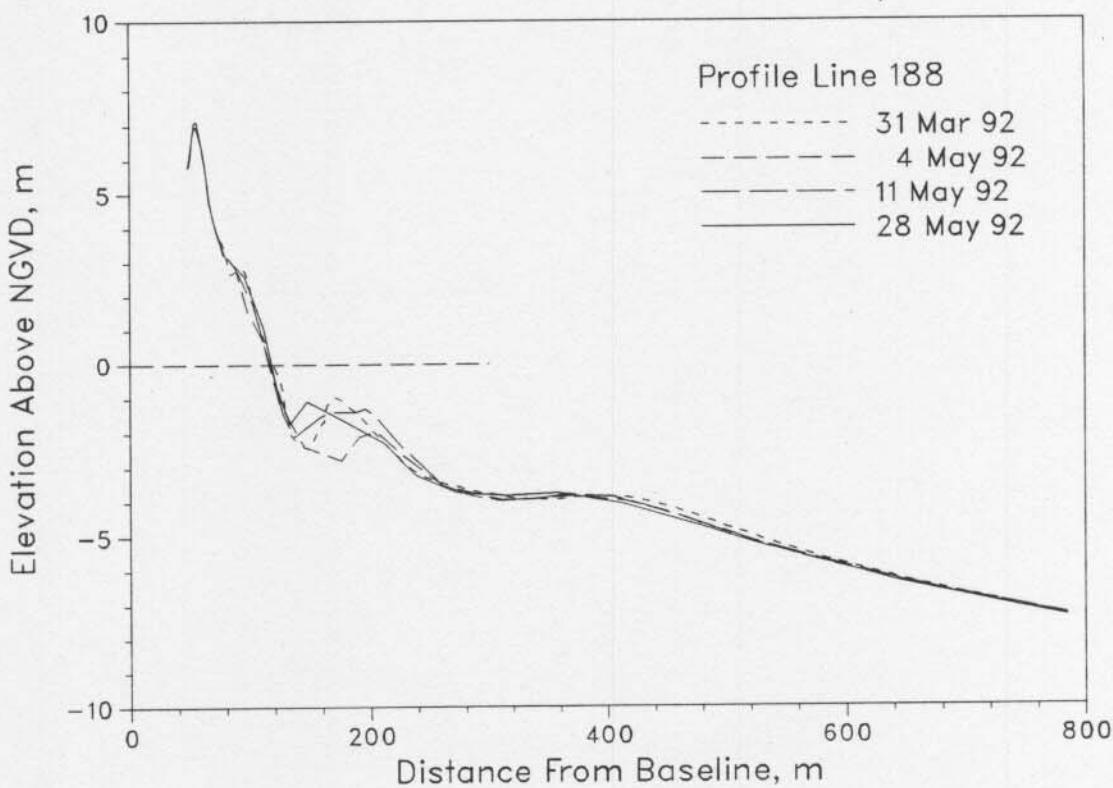


Figure 5. Monthly CRAB profiles on profile 188 - 517 m south of pier.

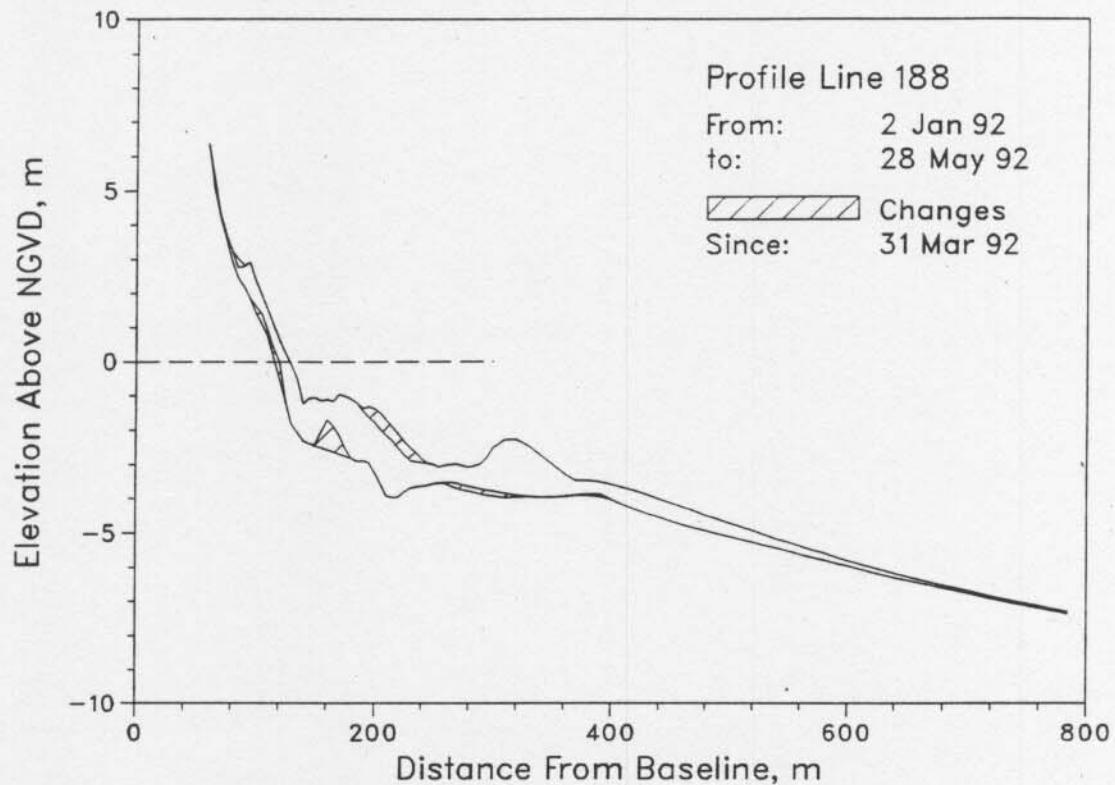


Figure 6. CRAB profile envelope - profile 188.

B. Bathymetry. Figure 7 includes a two- and three-dimensional contour map and a change plot derived from the bathymetric survey on 28 May. Wide contour lines on the change diagram represent eroded areas; thin lines indicate deposition.

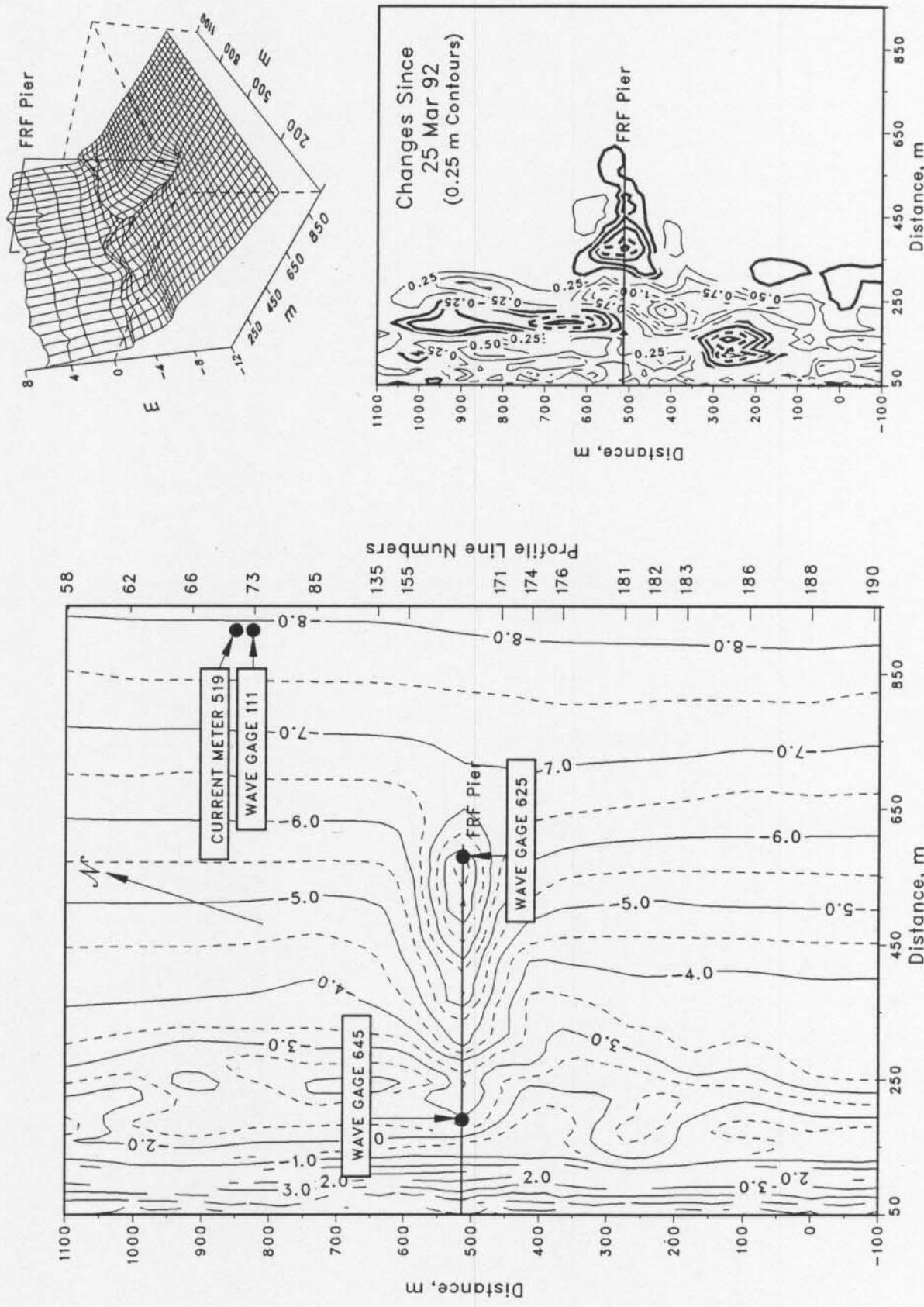


Figure 7. FRF bathymetry 28 May 92 depths relative to NGVD

PART VIII. SPECIAL EVENTS

A. Storm Data Collection. The following list identifies times when the wave height H_{mo} at the seaward end of the pier (i.e. as measured near the end of the pier) exceeded 2 m.

<u>Start</u>	<u>End</u>
6 May (0134)	8 May (1216)
19 May (1708)	20 May (2042)

B. Storm Synopsis.

6-8 May A low pressure system, associated with a cold front, formed along the Florida-Georgia coast remaining stationary through the morning of 7 May. By the morning of 8 May the storm had made landfall along the southern coast of North Carolina and headed inland. The maximum H_{mo} (at gage 625) of 3.0 meters ($T_p = 9.9$ sec) was attained at 0842 EST on 7 May. Maximum winds (from northeast) reached 17.7 m/s on 7 May at 1000 EST. Atmospheric pressure was unaffected. There was 38 mm of precipitation.

19-20 May Winds associated with a Canadian high pressure system generated these storm waves. The maximum H_{mo} (at gage 625) of 2.1 meters ($T_p = 8.8$ sec) was attained at 2200 EST on 19 May. Maximum winds (from northeast) reached 13.9 m/s on 19 May at 1816 EST.

Distribution List

Government Agencies:

OCE	U.S. Geological Survey
BERH	U.S. National Park Service
NAO	U.S. Naval Academy
NASA/Wallops Flight Center	U.S. Naval Civil Eng. Lab
NOAA (NOS, NWS)	U.S. Naval Fac. Eng. Com.
SAD	U.S. Naval Oceanographic Off.
SAW	U.S. Naval Research Lab

Colleges/Universities:

California Inst. of Tech.	Stockton State College
East Carolina University	University of Akron
Florida Inst. of Tech.	University of Delaware
Harvard University	University of Florida
Naval Post Graduate School	University of Maryland
NC State University	University of Miami
Old Dominion University	University of North Carolina
Oregon State University	University of N. Colorado
Prince George's College	University of Rhode Island
Rutgers University	University of Virginia
Scripps Inst. of Oceanography	Va. Inst. of Marine Science
Southern Illinois University	

Others:

City of Va. Beach, VA	MEC Systems Corporation
Coastal Barge Corporation	Moffatt & Nichol, Eng.
Coastal and Est. Res., Inc.	Offshore Coastal Technologies
Coastal Science & Eng., Inc.	Mr. Rowland
Dr. Galvin	Mr. Savage
GEOMET Tech., Inc.	Sea Port Supply Corp.
Greenhorne & O'Mara, Inc.	Shell Development
Dr. Hylton	Sherwood Industries
Mary Marr, Inc.	Mr. & Mrs. Valpey
Mr. Mason	WCTI-TV
Masonite Corporation	SEASUN Power Systems

Foreign:

W. F. Baird & Asso. Coastal Engineers, Ltd (Canada)
Queen's University, Ontario (Canada)
Ministry of Construction, Coastal Division (Japan)
Norwegian Hydrodynamic Laboratories (Norway)
University of New South Wales (Australia)
University of Sydney (Australia)